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CLAIMS

1. A laser system comprising:

(a) a laser generating a main beam;

(b) a guard band laser arranged concentric to the main laser and generating a guard band beam;

(c) a receiver for receiving the guard band beam;

(d) a trigger circuit coupled to the guard band receiver, the trigger circuit generating a signal upon interruption of the guard band; and

(e) means responsive to the trigger circuit for altering the performance of the main beam upon interruption of the guard band beam.

2. The laser system of Claim 1 wherein the guard band laser is an annular laser.

3. The laser system of Claim 1 wherein the guard band laser is a set of lasers arranged concentric to the laser.

4. A laser system having improved signal continuity and safety, comprising:

(a) a laser including an energy source and optical surface in a chamber coupled to an energy pump and providing a laser beam;

(b) a guard laser concentric with the laser including an energy source and an optical surface in a chamber coupled to an energy pump and providing a guard beam surrounding the laser beam as a protective layer;

(c) a receiver comprising a central lens for receiving the laser beam and coupled to a main receiver;

(d) an annular, segmented set of mirrors and lenses surrounding the central lens as a set of parallel receivers for receiving the guard laser beam;

(e) a trigger circuit connected to the set of parallel receivers for generating a signal upon interruption of the guard beam; and

(f) means responsive to the trigger circuit for altering the laser beam upon interruption of the guard beam.

5. The laser system of Claim 4 further comprising:

sensor means coupled to the trigger circuit for detecting climatic conditions and preventing shutdown of the main laser.

6. The laser system of Claim 4 further comprising:

a return signal laser responding to guard band interruptions as sensed by the trigger circuit and generating a return signal to shut down or modify the signal level of the laser beam.

7. The laser system of Claim 4 further comprising:

a buffer circuit for storing an input signal to the laser prior to shutdown.

8. The laser system of Claim 4 wherein the guard beam is coaxially aligned with the laser beam.

9. The laser system of Claim 4 wherein the guard beam is aligned and cone shaped with respect to the laser beam.

10. The laser system of Claim 4 wherein the laser is a continuous wave laser.

11. The laser system of Claim 4 wherein the guard laser is a pulsed laser.

12. A laser system having improved signal continuity and safety, comprising:

(a) a continuous wave laser including an energy source and optical surface in a chamber coupled to an energy pump and providing a laser beam;

(b) a pulsed guard laser concentric with the laser including an energy source and an optical surface in a chamber coupled to an energy pump and providing a coaxially aligned guard beam surrounding the laser beam as a protective layer;

(c) a receiver comprising a central lens for receiving the laser beam and coupled to a main receiver;

(d) an annular, segmented set of mirrors and lenses surrounding the central lens as a set of parallel receivers for receiving the guard laser beam;

(e) a trigger circuit connected to the set of parallel receivers for generating a trigger signal upon interruption of the guard beam;

(f) a return laser circuit means responsive to the trigger circuit for altering the performance of laser beam upon interruption of the guard beam;

(g) a buffer circuit coupled to the return laser circuit means for storing an input signal to the laser, prior to shutdown;

(h) means for discharging the buffer circuit to the laser upon termination of the trigger signal; and

(i) means for sensing climatic conditions affecting the guard beam and preventing shutdown of the laser.

13. In a laser system including a main laser optically coupled to a main lens receiver, a guard laser optically coupled to a segmented set of lenses surrounding the

main lens and serving as parallel receivers for the guard laser, a method of providing improved signal continuity and safety for the main laser, comprising the steps of:

(a) transmitting a laser beam from the main laser to the main lens;

(b) transmitting and coaxially aligning a guard beam with the main laser beam as a protective layer surrounding the main laser beam;

(c) receiving the main laser beam in the main lens;

(d) receiving the guard beam in the segmented set of parallel receivers;

(e) detecting an interruption in the protective layer by the set of parallel receivers;

(f) generating a signal in response to the interruption of the protective layer; and

(g) altering the performance of the main laser beam in response to the generated signal.

14. The method of Claim 13 further comprising the step of:

(h) generating signals indicative of climatic conditions affecting the low power beam; and

(i) preventing the termination of the main laser beam in response to such climatic conditions.

15. The method of Claim 13 further comprising the step of:

(j) coupling a return laser to the generated signal for altering the performance including shutdown of the main laser in response to the generated signal.

16. The method of Claim 13 further comprising the step of:

(k) storing an input signal to the main laser prior to and during the period of the main laser shutdown due to the generated signal.

17. The method of Claim 16 further comprising the step of:

(l) restoring the stored signal and the input signal to the main laser upon termination of the generated signal.

18. The method of Claim 13 further comprising the step of:

(m) coupling a trigger circuit to the set of parallel receivers for producing the generated signal when the protective layer is interrupted.

19. The method of Claim 13 wherein the main laser transmits a continuous wave beam.

20. The method of Claim 13 wherein the guard beam laser transmits a low power pulsed beam.

21. The method of Claim 13 further comprising the step of:

(n) disposing a template about an area on a patient in which surgery is to be performed;

(o) directing the laser beam into the area to perform surgery;

(p) terminating the laser beam when the template is contacted by the laser beam; and

(q) restoring the laser beam when the laser beam is re-directed into the area.